



DOCUMENT 700-01

FREQUENCY MANAGEMENT GROUP

**FREQUENCY MANAGEMENT GUIDELINES FOR
NATIONAL AND SERVICE TEST AND TRAINING RANGES**

**WHITE SANDS MISSILE RANGE
KWAJALEIN MISSILE RANGE
YUMA PROVING GROUND
DUGWAY PROVING GROUND
ABERDEEN TEST CENTER
NATIONAL TRAINING CENTER**

**ATLANTIC FLEET WEAPONS TRAINING FACILITY
NAVAL AIR WARFARE CENTER WEAPONS DIVISION
NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION
NAVAL UNDERSEA WARFARE CENTER DIVISION, NEWPORT
PACIFIC MISSILE RANGE FACILITY
NAVAL UNDERSEA WARFARE CENTER DIVISION, KEYPORT**

**30TH SPACE WING
45TH SPACE WING
AIR FORCE FLIGHT TEST CENTER
AIR FORCE AIR ARMAMENT CENTER
AIR WARFARE CENTER
ARNOLD ENGINEERING DEVELOPMENT CENTER
BARRY M. GOLDWATER RANGE
UTAH TEST AND TRAINING RANGE**

NEVADA TEST SITE

**DISTRIBUTION A: APPROVED FOR PUBLIC RELEASE;
DISTRIBUTION IS UNLIMITED**

DOCUMENT 700-01

**FREQUENCY MANAGEMENT GUIDELINES FOR
NATIONAL AND SERVICE TEST AND TRAINING RANGES**

MAY 2001

Prepared by

**RANGE COMMANDERS COUNCIL
FREQUENCY MANAGEMENT GROUP**

Published by

**Secretariat
Range Commanders Council
U.S. Army White Sands Missile Range
New Mexico 88002**

This document is available electronically at: <http://jcs.mil/RCC>.

TABLE OF CONTENTS

	<u>Page</u>
1.1 PURPOSE.....	1
1.2 RESPONSIBILITIES	1
1.2.1 Range Commanders Council (RCC) Frequency Management Group (FMG)	1
1.2.2 Department of Defense Area Frequency Coordinator (DOD AFC)	1
1.2.3 Range Frequency Manager	2
1.2.4 Range Frequency Scheduling	3
1.2.5 Range Users	3
APPENDIX A - DEFINITIONS	A-2
APPENDIX B - RANGE POINTS OF CONTACT	B-2
Air Force Flight Test Center Frequency Management Office	B-2
Nellis Test And Training Range	B-2
Mid-Atlantic Area Frequency Coordination	B-2
Dod Eastern Area Frequency Coordinator.....	B-3
Eastern Range Scheduling Office	B-3
Kwajalein Dod Area Frequency Coordinator	B-3
Kwajalein Frequency Manager	B-3
APPENDIX C - RANGE COMMON SYSTEMS.....	C-2
Land Mobile Radio (LMR) 136 – 174 MHz and 406 – 420 MHz.....	C-2
Intrinsically Safe Devices	C-2
Flight Termination System (FTS) And Flight Restriction System (FRS)	C-2
Navigation Aids (Tacan, ILS, Glideslope, IFF).....	C-3
Joint Tactical Information Distribution Systems (JTIDS)	C-3
Global Positioning System (1227.6 MHz/L2 and 1575.42 MHz/L1, +/- 12 MHz).....	C-4
Advanced Range Data System/Range Applications Joint Program Office (ARDS/RAJPO).....	C-4
Aeronautical Telemetry (1435 – 1535 Mhz, 2200 – 2290 Mhz and 2360– 2385 Mhz)	C-4
Tactical Air Combat Training System /Air Combat Maneuvering Instrumentation	C-5
Range Tracking Radars	C-5
Electronic Attack	C-5
APPENDIX D - RANGE SPECIFIC PROCEDURES	D-2
Eastern Range Frequency Scheduling	D-2
Kwajalein Missile Range	D-2

1.1 PURPOSE

This document provides the range user with guidance and information concerning the use of the radio frequency spectrum at the National and Service Test and Training Ranges. This document implements national spectrum policy set by the National Telecommunications and Information Administration (NTIA), the Federal Communications Commission (FCC), Title 47 of the US Federal Code of Regulations, Air Force Instruction (AFI) 33-118, Air Force Manual (AFM) 33-120, Army Regulation (AR) 105-24, and other applicable documents. The information contained in this document is meant to augment national spectrum policy and provide for the safe, efficient, consistent, and scheduled use of the radio frequency (RF) spectrum.

1.2 RESPONSIBILITIES

1.2.1 Range Commanders Council (RCC) Frequency Management Group (FMG)

The FMG works as an ad hoc body to address frequency related issues that impact the ability of the test and training ranges to perform their missions. Additionally it brings together the required expertise to address, but is not limited to, the following:

- (a) Spectrum Loss
- (b) Frequency Scheduling
- (c) Research Development Test and Evaluation (RDT&E) Spectrum Supportability
- (d) Range Spectrum Requirements

1.2.2 Department of Defense Area Frequency Coordinator (DOD AFC)

The Department of Defense, in accordance with the Joint Chiefs of Staff, the Military Communications-Electronics Board (MCEB) and the military departments, established the DOD Area Frequency Coordinator (AFC) system to ensure successful operation of the extensive communication-electronics equipment at the National and Service Test and Training Ranges. The objective is to provide an area focal point for rapid, effective radio frequency coordination for the ranges to minimize harmful interference and promote the DOD Electromagnetic Compatibility Program, while maximizing efficient radio spectrum frequency use.

In accordance with ACP-190, AFCs are responsible for the establishment of effective frequency coordination systems and processes at, among, and within line-of-sight of National and Service Test and Training Ranges. This coordination is essential to ensure successful operation of extensive range and range-hosted spectrum-dependent systems. Range Commanders will ensure that range and range-hosted spectrum-dependent systems comply with all spectrum-related National, Joint, DOD and Military Department regulations, instructions, manuals and policies. The Range Commanders are also responsible for the operational

deconfliction of all spectrum-dependent assets under their purview with other spectrum users through established frequency management channels.

1.2.3 Range Frequency Manager

The Range Frequency Manager (RFM) is responsible for managing, coordinating, and granting access to the electromagnetic spectrum resources at or near the National and Service Test and Training Ranges. They validate, control, protect, justify, account for and defend the electromagnetic environment for all operations. The RFM is the single test and training range focal point for all range electromagnetic spectrum access requirements. The RFM provides technical guidance and resolves Electromagnetic Interference and Compatibility (EMI/EMC) issues. The RFM is also the single focal point for all internal/external coordination with the government and civil authorities which may be necessary to preclude or resolve test range EMI/EMC conflicts. The following is a list of RFM responsibilities:

- (a) Ensures that all test range projects and programs are following proper DOD procurement rules regarding acquisition of spectrum dependent equipment, and that a valid JF-12 or DD Form 1494 has been submitted and approved.
- (b) Ensures that all current and future test range activities comply with all federal, civil, DOD, and local rules and laws regarding the use of the electromagnetic spectrum.
- (c) Ensures that current or proposed test range activities will not cause harmful interference to FAA safety of flight, civil public safety systems, or other crucial civil systems in proximity to the test range.
- (d) Obtains authority through local area, regional, national, and international channels as necessary to obtain legal license for test and training range activities which require access to the electromagnetic spectrum.
- (e) Processes and coordinates Electronic Attack (formerly EW/ECM/ECCM) requests through appropriate local and national channels in accordance with Chairman Joints Chiefs of Staff Manual (CJCSM) 3212-03.
- (f) Maintains close liaison with all international, federal, and civil frequency management offices within test range operations areas.
- (g) Maintains a cost accounting database of test range infrastructure costs necessary to defend, justify, and respond to national spectrum re-allocation efforts.
- (h) Maintains a database of all test and training range infrastructure and program spectrum requirements and operating frequencies.
- (i) Provides test and training range customers with EMI/EMC monitoring as necessary to ensure test program objectives can be met.

- (j) Provides test and training range customers with electromagnetic engineering services as necessary.
- (k) Provides test and training range customers' guidance on the proper use of the electromagnetic spectrum.
- (l) Monitors test range electromagnetic activities to enforce spectrum access limitations placed upon programs to protect FAA and FCC systems.
- (m) Maintains, as a minimum, a written history of EMI/EMC issues and their resolutions.

1.2.4 Range Frequency Scheduling

Because spectrum availability for test and training is limited, most ranges require scheduling to provide maximum utilization of the RF spectrum. All scheduling is done on a priority basis as determined by DOD, the Range Commander, or other priority schemes. The Range Frequency Scheduling Office takes in range customer requirements, then deconflicts and passes this schedule on to the DOD Area Frequency Coordinator (AFC) office for that geographic area with concurrence from the RFM. The DOD AFC then deconflicts the single range requirements with other ranges and AFCs as necessary to ensure interference-free operations at all the applicable test and training ranges in accordance with ACP-190 Annex B. It is the responsibility of the Range Frequency Scheduling Office to inform the DOD AFC and RFM of missions that require coordination with multiple AFCs. Once notified, it is the responsibility of the AFC to deconflict that use with other AFCs as appropriate.

1.2.5 Range Users

As a range user, four requirements must be met prior to radiating in the electromagnetic spectrum: 1. Allocation, 2. Notification, 3. Assignment, and 4. Scheduling. Prior to operations, a Radio Frequency Authorization (RFA) letter must be obtained from the responsible RFM. The first step in obtaining an RFA is to contact the RFM responsible for that test location (see appendix B of this document). This requirement should be accomplished as soon as a test or training location has been selected as a candidate for testing. Certain spectrum access requirements may be difficult to secure at some test locations. Contacting the responsible RFM either directly or through the local frequency manager in a timely manner will ensure that test preparations go as smoothly as possible.

A DD Form 1494, as required by OMB Circular A-11, DOD and civil regulations, must be submitted or obtained prior to operation of all spectrum dependent equipment. Without a valid frequency allocation, granting electromagnetic spectrum access may be impossible and program test objectives will be in jeopardy. If a valid DD Form 1494/JF-12 exists, the RFM can process a frequency assignment to authorize program access to the spectrum. Assignment processing time varies between agencies and with the complexity of the requirement. This assignment process may take three months to one year, but can usually be completed within six months. Under some conditions, access to the spectrum will be shared with other range or civil users. In these cases, scheduling and deconfliction with other users will be necessary. If a program is required to

schedule operations through one of the Range Frequency Scheduling Offices, the proper points of contact and limitations will be stated on the program's RFA letter. If a program receives any harmful interference, the responsible RFM should be notified immediately. Under no circumstances is a program to make any attempt to resolve, track down, or identify an interference source. The RFM is the only entity with the authority to track down and resolve interference. Any deviation from this policy could lead to a serious breach in US National Security.

It should be noted that some access requirements cannot be granted under any circumstances. The structure of frequency management within the United States places authority over federal access to the electromagnetic spectrum under the Department of Commerce. As such, the DOD is only one of 23 federal agencies vying for access to the electromagnetic spectrum. The DOD does not have the ultimate authority over access to any portion of the electromagnetic spectrum, and can legally be denied access for any number of technical or political reasons. If proper national and DOD policies and guidelines have been followed through the procurement and development phases of a program, there should be few restrictions attached to granting the required access. For equipment that does not have an approved DD Form 1494/JF-12, it is the user's/program's responsibility to complete the required paperwork. The RFM will provide all the necessary administrative support in processing the paperwork through proper channels.

APPENDIX A

DEFINITIONS

DEFINITIONS

NOTE: The following definitions of frequency management terms were extracted from international, national, and DOD regulations and directives. Where appropriate, the source is given in parentheses following each definition. For example, (RR) -- *International Telecommunications Union Radio Regulations* and (NTIA) -- *National Telecommunications and Information Administration Manual of Regulations and Procedures for Federal Radio Frequency Management*.

allocation - Entry in the Table Of Frequency Allocations of a given frequency band for its use by one or more (terrestrial or space) radio communication services or the radio astronomy service under specified conditions. This term also applies to the frequency band concerned. (RR)

assignment - Authorization given by an administration for a radio station to use a Radio Frequency (RF) or RF channel under specified conditions. (RR)

channeling plan - The plan by which the frequencies within a frequency band are to be assigned.

Electromagnetic Compatibility (EMC) - The condition that prevails when telecommunications equipment is performing its individually designed function in a common electromagnetic environment without causing or suffering unacceptable degradation due to unintentional electromagnetic interference (EMI) to or from other equipment in the same environment. (NTIA)

Electromagnetic Interference (EMI) - Any electromagnetic disturbance that interrupts, obstructs, or otherwise degrades or limits the effective performance of electronics or electrical equipment. EMI can be induced intentionally as in some forms of electronic warfare, or unintentionally as a result of spurious emissions and responses, intermodulation products, and the like. (JP 1-02)

frequency assignment - See “assignment” (of a radio frequency or radio frequency channel).

frequency assignment, temporary - An assignment effective for 90 days or less.

harmful interference - Interference that endangers the functioning of a radio navigation service or other safety services, or that seriously degrades, obstructs, or repeatedly interrupts a radio communication service operating in accordance with the radio regulations. (RR)

industrial, scientific, and medical (ISM) applications - Operation of equipment or appliances designed to generate and use local radio-frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunications. (RR)

interference - The effect of unwanted energy due to one or a combination of emissions, radiation, or induction upon reception in a radio communication system, manifested by any performance degradation, misinterpretation, or loss of information that could be extracted in the absence of such unwanted energy. (RR)

low-power communication device - A restricted radiation device, exclusive of those employing conducted or guided RF techniques, used for the transmission of signs, signals (including control signals), writing, images and sounds, or intelligence of any nature by radiation of electromagnetic energy. Examples: wireless microphone, phonograph oscillator, radio-controlled garage door opener, and radio-controlled models. All low power devices must have an assigned FCC low power authorization (as indicated on the device) per part 15 of Title 47 of the US Code of Federal Regulations.

NTIA Manual - Department of Commerce (DOC) National Telecommunications and Information Administration (NTIA) *Manual of Regulations and Procedures for Federal Frequency Management*.

Radio Frequency Authorization (RFA) - A written document signed by the cognizant frequency manager in charge of the area to be operating in that lists all of the frequencies on which a program is authorized to radiate. This document will specify all restrictions and conditions that must be adhered to during use of the frequencies authorized.

Radio Frequency Spectrum - The RF spectrum includes the frequencies from 3.0 kHz to 400 GHz. The presently allocated spectrum is from 9 kHz to 381 GHz.

radio location - Radio determination used for purposes other than radio navigation. (RR)

Range Commander - In this publication, the commander of a test, tactical, or training range.

range frequency scheduling - Organization that handles daily scheduling of range frequencies. These frequencies must have been authorized by the responsible frequency manager for that area.

restricted radiation device - A device in which the generation of RF energy is intentionally incorporated into the design, and in which the RF energy is conducted along wires or is radiated, exclusive of transmitters for which provisions are made under those parts of Chapter 7 of the NTIA Manual other than Part 7.9, and exclusive of ISM equipment. (NTIA)

spectrum dependent system - Any equipment, system, or subsystem that intentionally uses the radio frequency spectrum to fulfill its intended purpose, regardless of transmitted power, frequency, or purpose.

spurious emission - Emission on a frequency or frequencies which is outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products and frequency conversion products, but exclude out-of-band emissions. (RR)

telecommunications - Any transmission, emission, or reception of signs, signals, writings, images, and sounds or information of any nature by wire, radio, visual or other electromagnetic systems. (RR)

APPENDIX B

RANGE POINTS OF CONTACT

RANGE POINTS OF CONTACT

AIR FORCE FLIGHT TEST CENTER FREQUENCY MANAGEMENT OFFICE

Mr. James T Rizzo
Building 300
300 Jones Road
Edwards AFB, CA 93524

Phone	(661) 277-8448	DSN 527-8448
FAX	(661) 277-8879	DSN 527-8879
E-mail	james.rizzo@edwards.af.mil	

NELLIS TEST AND TRAINING RANGE (NTTR)

DOD Nellis AFC
5870 Devlin Drive.
Nellis AFB, NV 89191-7075

Phone	(702) 652-3393/3417	DSN 682-3393/3417
FAX	(702) 652-7354	DSN 682-7354
NIPRnet e-mail	99csfqm@nellis.af.mil	
SIPRnet e-mail	DODAFC@nellis.af.smil.mil	
Web Page	http://www.nellis.af.mil/units/99cs/scml/	

MID-ATLANTIC AREA FREQUENCY COORDINATION

Mr. Mikel R. Ryan
Code 5.1.1.3A, Bldg. 1406 , Unit 4
23029 Cedar Point Road
NAVAIRWARCENACDIV Patuxent River MD 20670-1183

Phone	(301) 342-1532/1194	DSN 342-1532/1194
FAX	(301) 342-1200	DSN 342-1200
E-mail	ryanmr2@chesapeake.net	
SIPRnet	e-mail_ryanmr2@navair.navy.smil.mil	
Web Page	http://spectrum.nawead.navy.mil	

DoD EASTERN AREA FREQUENCY COORDINATOR

Mr. Richard H. Akers, Sr.
DOD EAFC
1225 Pershing Place
Patrick AFB, FL 32925

Phone	(321) 494-5838	DSN: 854-5838
FAX	(321) 494-8715	DSN: 854-8715
EMAIL	<u>richard.akers@patrick.af.mil</u>	

EASTERN RANGE SCHEDULING OFFICE

Cape Canaveral AFS, FL

Phone	(321) 853-2012/2012	DSN: 467-2013/2012
FAX	(321) 853-7338	DSN: 467-7338

KWAJALEIN DOD AREA FREQUENCY COORDINATOR

Mr. Don Hornbrook
SMDC-AC-K-CI
PO Box 769
APO AP 96555

Phone	(805) 355-2283	DSN 254-2283
FAX	(805) 355-1410	DSN 254-1410
EMAIL	<u>don.hornbrook@usaka.smdc.army.mil</u>	

KWAJALEIN FREQUENCY MANAGER

Mr. Harold Fellows
Raytheon RSE
PO Box 1706
APO AP 96555

Phone	(805) 355-2953	DSN 254-2953
FAX	(805) 355-5555	DSN 254-5555
EMAIL	<u>fellowsh@kmr.ll.mit.edu</u>	

APPENDIX C

RANGE COMMON SYSTEMS

RANGE COMMON SYSTEMS

Range common systems are those systems common to nearly all test and training ranges. Their use is nearly identical at all the major test and training ranges, although there are some variations between ranges. These systems are for the most part put in place so that range users can move from range to range without incurring undue rechanneling delays and expenses. These common systems should prevent a range user from replacing equipment or procedures when transitioning between ranges.

LAND MOBILE RADIO (LMR) 136 – 174 MHZ AND 406 – 420 MHZ

The LMR band is broken down into three sub-bands: 138 - 150.5 MHz, 160 - 174 MHz, and 406 - 420 MHz. All LMR bands are required to change from wideband 25 kHz channel spacing to Narrow-band 12.5 kHz spacing by year 2005 or 2008 with all new installations narrow-band 12.5 kHz compliant. Federal LMR bands are 138-144 MHz, 148-148.9 MHz, 150.05-150.8 MHz, 162.0125-173.2 MHz, 173.4-174 MHz, and 410-420 MHz. This shared band is allocated 406.1-410 MHz and shared with the FCC, with the primary basis to Government Non-Military agencies. If a program or organization requires LMR devices for normal land mobile use, the range should be able to accommodate that requirement on the currently installed radio system. If a program's requirements cannot be accommodated on the existing radio system or these frequency bands are to be used for other than normal LMR purposes, contact the local RFM.

INTRINSICALLY SAFE DEVICES

Intrinsic safety prevents instruments and low voltage circuits in hazardous areas from releasing sufficient energy to ignite volatile gasses. Radios and other electronic devices must be certified as intrinsically safe if they are to be used in the following areas:

- (a) Hangers
- (b) Areas where a fuel spill may occur
- (c) Where volatile vapors may accumulate (such as a manhole)
- (d) Within 10 feet of an aircraft being fueled
- (e) In any Class 1 Division 1 or Class 1 Division 2 area
- (f) Additional areas designated by the Fire Chief.

FLIGHT TERMINATION SYSTEM (FTS) AND FLIGHT RESTRICTION SYSTEM (FRS)

Of all common range systems, FTS and FRS are the only ones specifically designed and used to destroy or crash a test vehicle. As such, FTS and FRS are afforded the highest protection

available to any system operating at any test range. The following restrictions are placed upon operation of FTSs and FRSs at or near the test ranges:

- (a) No flight termination transmitter will radiate on any flight termination frequency without scheduling that use through range frequency scheduling and the appropriate area frequency coordinators (AFC/RFM) office. This scheduling includes all maintenance operations and pre or post mission tests.
- (b) All flights requiring flight termination will have their FTS/FRS frequencies deconflicted throughout the flight path and within line of sight-of-any systems capable of causing interference to the systems under test regardless of area or location. This deconfliction will be accomplished through the appropriate RFMs and AFCs as necessary to ensure interference-free operations.
- (c) Missions operating at altitudes or areas that require coordination with two or more AFCs must begin the notification and deconfliction process at least one week (depending on the range) prior to the required operation.
- (d) Maintenance or “systems check” operations should not under any circumstances be performed using a live tone set. Where possible, transmitter checks should be performed using no tones in a CW mode.

NAVIGATION AIDS (TACAN, ILS, GLIDESLOPE, IFF)

Utilization of navigation aids does not require special authorization or mention within an organization’s RFA. These assets are licensed for the use of the entire installation without notification or scheduling. Jamming, meaconing, or spoofing of these systems is strictly forbidden under nearly all circumstances. If jamming/spoofing of navigation aids is required to meet program objectives, contact the RFM immediately to begin the justification coordination process as soon as possible.

JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEMS (JTIDS)

If the test range already has a JTIDS assignment in place, use of JTIDS should be approved quickly. As long as Time Slot Duty Factors (TSDFs) required for testing do not exceed existing assignment restrictions, there should be no bar to immediate program approval. If a program TSDF requirement exceeds current assigned parameters or an existing JTIDS assignment does not exist, a long and lengthy coordination process may be required. All JTIDS use must be deconflicted through the regional deconfliction server located at Fort McPherson, GA. Data entry into the deconfliction server can only be accomplished by an appointed JTIDS Coordinator. If the combined JTIDS TSDF of all missions conducted within an area exceeds the authorized TSDF for that area, one or more operations will have to be curtailed to comply with assignment limitations.

GLOBAL POSITIONING SYSTEM (1227.6 MHZ/L2 AND 1575.42 MHZ/L1, +/- 12 MHZ)

Many of the crucial functions (tracking, safety, timing, etc.) at the ranges are dependent upon exploitation of precise Global Positioning System (GPS) position, velocity, and time information. In addition, the test ranges conduct GPS RDT&E in laboratories, anechoic chambers, and at outdoor facilities. At the training ranges, the DOD conducts small and large-scale force exercises to include local area GPS denial. This testing and training is necessary to 1. facilitate development of doctrine and tactics for countering the threat to the GPS environment and 2. ensure our Armed Forces have the equipment and training to operate in tactical situations where GPS interference may be present.

As per JCS (J6) message 222045Z JAN 96, national level coordination for all range GPS radiating (considered jamming) is required a minimum of 60 days prior to use. A Restricted Band Electronic Attack Frequency Clearance Proposal must be submitted through the Service's national-level Frequency Management Office to the Joint Staff in accordance with the CJCS Instruction 3210.03, *Joint Electronic Warfare Policy*. Compliance with these guidelines must be conducted through the responsible RFM. After technical evaluation by the Joint Spectrum Center, the final approval must be given by the HQ FAA Spectrum and Policy Management Office (ASR-1). Because of the sensitivity, criticality and widespread usage of GPS, all GPS jamming approvals are expected to be highly conditional and restrictive.

ADVANCED RANGE DATA SYSTEM/RANGE APPLICATIONS JOINT PROGRAM OFFICE (ARDS/RAJPO)

The ARDS/RAJPO data link systems exist at most of the test and training ranges. No special authorization is required for the use of these systems unless alterations to the existing system layout is required. If the existing system must be altered in a way that changes the emission characteristics, increases coverage or requires additional frequencies to fulfill program requirements, contact the RFM.

AERONAUTICAL TELEMETRY (1435 – 1535 MHZ, 2200 – 2290 MHZ AND 2360– 2385 MHZ)

The aeronautical telemetry bands are among the most highly utilized and critical assets required at the test and training ranges. The use of these flight test bands is tightly controlled and in nearly all cases, use is scheduled in 15-minute increments. Congestion in these bands is reaching the critical stage. Consequently, all programs should make every effort to reduce bit rates and use tunable frequency transmitters to decrease the probability of mission cancellation due to unavailability of spectrum. Once a program has obtained a valid RFA from the RFM, the frequencies authorized can be scheduled through the Range Scheduling Office. Scheduling can be completed in near real time, but telemetry frequencies should be scheduled at least one week in advance.

TACTICAL AIR COMBAT TRAINING SYSTEM /AIR COMBAT MANEUVERING INSTRUMENTATION

The primary air combat training system at the ranges is the Tactical Air Combat Training System/Air Combat Maneuvering Instrumentation (TACTS/ACMI). Both systems provide real time monitoring of aircraft combat operations and maneuvering such as gun-scoring, no-drop bombing evasion, intercept tactics, and electronic warfare during training exercises and records and plays-back/displays maneuvers during pilot debriefing. (TACTS is the US Navy system designation and ACMI is the US Air Force system designation.) The aircraft use Airborne Instrumentation System (AIS) pods to send data to a ground remote Tracking Instrumentation Subsystem (TIS) station. This configuration consists of several remote stations that communicate with a single centrally located master (TIS) station. The TACTS/ACMI will eventually be replaced with the Joint Tactical Combat Training System (JTCTS).

The use of TACTS/ACMI systems requires no special authorization unless alteration to the existing assignments is required. If the existing system must be altered in a way that changes the emission characteristics, increases coverage or requires additional frequencies to fulfill program requirements, contact the RFM.

RANGE TRACKING RADARS

Range Tracking Radars are in place for customer support at most of the test and training ranges. No special authorization is required for the use of these systems unless alteration to the existing assignments is required. If the existing system must be altered in a way that changes the emission characteristics, increases coverage or requires additional frequencies to fulfill program requirements, contact the RFM.

ELECTRONIC ATTACK

The test and training ranges, as well as other agencies perform Electronic Attack (EA). These EA systems require broad use of large portions of the spectrum. All EA missions originating from the test range must comply with CJCSM 3212-03, *Performing Electronic Attack in the United States and Canada for Tests, Training, and Exercises*. Compliance with this manual is accomplished through the RFM. Coordination for EA should be started as soon as the requirement is identified to ensure that the proper authorizations are secured in time to fulfill program requirements.

APPENDIX D

RANGE SPECIFIC PROCEDURES

RANGE SPECIFIC PROCEDURES

EASTERN RANGE FREQUENCY SCHEDULING

All scheduling on the Eastern Range is accomplished on a priority basis in accordance with 45th Space Wing Instruction 13-206, Eastern Range Scheduling. The Range Scheduling Office receives range customer requirements (including frequencies) and passes them to the Range Frequency Scheduling Office. The Range Frequency Scheduling Office, utilizing the frequency database and software provided by the RFM/DOD Eastern Area Frequency Coordinator (EAFC) Office, checks to see if valid radio frequency authorizations exist. If they exist, the Range Frequency Scheduling Office deconflicts the request against other existing range/customer requirements and returns them to the Range Scheduling Office for determination of priority and placement on the schedule. If valid RFAs do not exist, the customer is referred to the RFM for resolution. On the Eastern Range, the DOD EAFC and RFM are located in the same office.

KWAJALEIN MISSILE RANGE

The frequency acquisition procedure at Kwajalein Missile Range (KMR) is unique because the range is located on foreign soil and the US State Department is heavily involved in the acquisition process. The KMR procedure has been co-authored with the Joint Frequency Management Office (JFMO) Pacific and RMI and is contained as Annex L in the NTIA Manual of Regulations. The annex that follows is included in this document for information purposes only.

ANNEX L

Freely Associated States

1.1 INTRODUCTION

The United States has administered the United Nations Trust Territory of the Pacific Islands (TTPI) since July, 1947. The area involved now includes four separate political jurisdictions: the Commonwealth of the Northern Mariana Islands (CNMI) (see Possessions or Commonwealths of the United States in Annex G, Part 2); the Federated States of Micronesia (FSM); the Republic of the Marshall Islands (RMI); and the Republic of Palau (RP). During negotiations on the TTPI's future, the United States offered the status of United States territory to each jurisdiction. Elected representatives of FSM, RMI, and RP rejected that status in favor of a different relationship involving greater local autonomy but retaining strong ties with the United States. While this concept of "free association" has no precise definition in international law, it is recognized in resolutions of the United Nations General Assembly as an appropriate political alternative to independence or metropolitan (territorial) status for political entities emerging from a colonial or trusteeship status.

The United States concluded Compacts of Free Association with the Governments of the Federated States of Micronesia and the Republic of the Marshall Islands in 1982 and 1983, respectively. Following approval by those island nations, the Compacts were approved in the United States by Public Law 99-239 of January 14, 1986 ("Compact of Free Association Act of 1985") and entered into force later in 1986. A similar Compact of Free Association was concluded with the Republic of Palau and subsequently approved by the United States in 1986. However, Palau did not complete its approval process until much later and the Compact did not enter into force until October, 1994.

The Compacts with the FSM, RMI and Palau are extensive. Article III includes provisions on communications and the operation of U.S. telecommunications services in the Islands. Specifi-

cally, Section 131 deals with the United States role as representative for the Freely Associated States in the International Telecommunication Union and with Federal Communications Commission's jurisdiction over earth terminal stations owned or operated by U.S. common carriers. Section 132 deals with the operation of U.S. telecommunications services, including the installation and operation of facilities and the use of associated radio frequencies. In addition, there are supplementary agreements which establish the authority and responsibilities of our respective Governments under Sections 131 and 132 of the Compacts. Two major provisions are that each Signatory Government must designate a "Competent Authority" to carry out the provisions of the agreements and that a "Joint Telecommunication Board" be established with each of the Island nations to harmonize telecommunication operations of the United States with the respective Governments.

On October 16, 1986, the President signed Executive Order 12569 on management of the Compacts which vested authority and responsibility in the Secretary of State to ensure that the obligations of the United States as set forth in the Compacts and their related agreements are carried out. E.O. 12569 also required the Department of the Interior to seek appropriation of funds and to make available economic and financial assistance appropriated pursuant to the Compacts.

On June 30, 1987, the Department of State's Office of Radio Spectrum Policy (previously the Office of International Radio Communications), Bureau of Economics and Business Affairs, was designated by the Assistant Secretary of State for East Asian and Pacific Affairs as the "Competent Authority" to act on behalf of the United States in carrying out the Section 131 and 132 Agreements. On July 9, 1987, the National Security Council acknowledged this appointment. The Office of Radio Spectrum Policy has established and provides the chairman for an Interagency Working Group on

Micronesia responsible for telecommunications issues pertaining to the Freely Associated States, including preparation for meetings of the Joint Telecommunication Boards.

2.1 AUTHORITY FOR USE OF THE RADIO FREQUENCY SPECTRUM

As sovereign Governments, the Federated States of Micronesia (FSM), the Republic of the Marshall Islands (RMI), and the Republic of Palau have full authority and responsibility to regulate their respective domestic and foreign communications, including use of the radio spectrum. Section 132 of the Compacts, however, requires the FSM, RMI and Palau to permit the U.S. Government to operate telecommunications services to the extent necessary to fulfill its obligations under the Compact. Concurrently, the United States is obliged to coordinate changes to telecommunications facilities and extraordinary activities or exercises to avoid interference.

The requirement to coordinate facilities and to avoid radio interference was given a high priority at the first meetings of the Joint Telecommunication Boards, resulting in the adoption of procedures for the assignment of radio frequencies in the FSM, RMI and Palau. Under these procedures, the Competent Authority for the United States, *i.e.*, the Department of State's Office of Radio Spectrum Policy, issues frequency authorizations to U.S. Government agencies after appropriate coordination with the respective Governments.

3.1 PROCEDURES FOR OBTAINING A FREQUENCY AUTHORIZATION

Submission of frequency assignment applications to the Frequency Assignment Subcommittee (FAS) for inclusion in the Government Master File (GMF) for record purposes is required for a government radio station to use a radio frequency within the Freely Associated States. Except for Department of Defense (DOD) use of the radio spectrum within 200 nautical miles of the U.S. Army Kwajalein Atoll in the Republic of the Marshall Islands, the Department of the Interior, acting on behalf of the Competent Authority, will effect the necessary

coordination with the FSM, RMI and Palau before recommending approval to the Competent Authority.

The islands administered by the Republic of the Marshall Islands (State/Country abbreviation -MHL), the Federated States of Micronesia (State/Country abbreviation - FSM), and the Republic of Palau (State/Country abbreviation -PLW) are listed in Annex G, Part 2.

Procedures for the U.S. Army Kwajalein Atoll, Republic of the Marshall Islands (RMI)

All Department of Defense (DOD) users who want to operate a system or equipment which emits a hertzian wave requiring temporary or permanent spectrum assignments within 200 nautical miles of the U.S. Army Kwajalein Atoll, Republic of Marshall Islands must comply with the following:

a. Temporary frequency assignments for a maximum of 60 days.

1. Equipment/systems must be spectrum certified.

2. Users must submit a frequency proposal at least 90 days prior to the required date of use to the Frequency Manager Kwajalein Missile Range with an information copy to JFMO PAC, Honolulu, HI and the appropriate MILDEF frequency management office (*i.e.* AFFMA, NAVEMSCEN, US Army CESO) in the standard frequency action format (SFAF).

3. The Frequency Manager Kwajalein Missile Range will thoroughly review the request against all the assignments in the Kwajalein database and forward them to JFMC PAC, Honolulu, HI for action with comments.

4. JFMO PAC will review the frequency proposals and crosscheck them against the Department of State (DOS) master frequency list of assignments/frequency bands coordinated with the Republic of Marshall Islands (RMI). Frequency proposals which fall within the DOS master frequency list of coordinated assignments will be processed, and those frequency proposals not covered by the master list of assignments will be forwarded to the Department of State by JFMO

Revised 1\2000

PAC with an information copy to the appropriate MILDEP for action.

b. Permanent Frequency Assignments

1. In order to obtain a permanent frequency assignment, equipment/systems must be spectrum certified.

2. A user must submit a frequency proposal via the Frequency Resource Record System (FRRS) to the Frequency Manager Kwajalein Missile Range in the SFAF. The Frequency Manager Kwajalein Missile Range will review the frequency proposal, recommend a frequency, assign a PAC serial number (i.e. PAC YY6000-YY6999), and forward it to JFMO PAC.

3. JFMO PAC will review the frequency proposal and crosscheck it against the Department of State (DOS) master frequency list of assignments/frequency bands coordinated with the Republic of Marshall Islands (RMI). Upon completion of the validation process, JFMO PAC will forward the permanent frequency assignment to the appropriate MILDEP for inclusion in the Government Master File (GMF). If the proposal does not fall within the DOS master frequency list of assignments/frequency bands coordinated with the RMI, see paragraph 6 below.

4. The Frequency Manager Kwajalein Missile Range will be required to maintain an accurate database of all temporary and permanent assigned frequencies within 200 nautical miles of U.S. Army Kwajalein Atoll, RMI, for coordination of frequency assignments and resolution of reported interference.

5. The Frequency Manager Kwajalein Missile Range, in coordination with appropriate user agencies, will ensure that five-year assignment record reviews are conducted for all permanent frequency assignments within the Kwajalein area of responsibility.

6. If the frequency proposal does not fall within an assignment in the DOS master list, JFMO PAC will submit the proposal to the Department of State for coordination with the RMI with an information copy to the appropriate MILDEP frequency management office. Upon approval from the Department of State, JFMO PAC will request that the Frequency Manager Kwajalein Missile Range assign a PAC serial number and process the request per the above procedures.

systems requiring the use of radio frequencies in the Federated States of Micronesia, the Republic of the Marshall Islands or the Republic of Palau may be required to undergo system review prior to receiving frequency authorization from the Competent Authority. This procedure applies to:

a. new telecommunications systems or subsystems, and major modifications to existing systems or subsystems, involving the use of satellites or spacecraft; and,

b. new major terrestrial systems or subsystems, and major modifications to existing systems or subsystems.

The Competent Authority will apply this procedure on a case-by-case basis when it is necessary to determine the impact of a new telecommunications system on other authorized or planned systems. When a system review is required, affected non-DOD agencies shall provide the appropriate data (in accordance with Chapter 10 of the NTIA Manual) to the Department of State which may submit it to the Spectrum Planning Subcommittee (SPS) for consideration. DOD services and agencies shall submit such documentation through established military system review channels to the Department of State. NTIA and/or the military review channels will provide recommendations, particularly with respect to spectrum support and potential for interference, to the Competent Authority which shall make the final decision in consultation with the Government involved.

4.1 REVIEW PROCEDURE FOR COMMUNICATIONS SYSTEMS

Government agencies planning to use, develop, procure or experiment with telecommunication

